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# Book Review: *Why people get lost: the psychology and neuroscience of spatial cognition* by Paul A. Dudchenko

Ilana R. Yurkiewicz
*Harvard Medical School*, ilana_yurkiewicz@hms.harvard.edu

Jack W. Tsao
*Uniformed Services University of the Health Sciences*

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## Book review

**Why people get lost: the psychology and neuroscience of spatial cognition, Paul A. Dudchenko, Oxford University Press, pages, $54.95, ISBN: 978-0-19-921086-2; 299**

"Losing sight of familiar landmarks. The feeling of being turned around. Panic, accompanied by an urge to run in any direction"

Who hasn't felt one or more of these symptoms? Getting lost is a universal experience, writes University of Stirling lecturer Paul A. Dudchenko in the first chapter of his book, unambiguously titled *Why People Get Lost*, that reviews experimental evidence to delve into the reasons that might be. "Being lost," he defines, "means being unable to find one's way." Thus, his work addresses the psychological aspects of our ability to navigate our environment, along with the neural correlates that underlie them. Dudchenko presents a series of questions that neatly frames the organization of the book. Do people have an internal sense of direction? Where is it in the brain? How does it develop? Do certain brain disorders hinder cognitive mapping? The first chapter closes with a spoiler. Our brains concoct an internal representation of our external surroundings, vulnerable to error accumulation when we are inattentive or in unfamiliar territory. This error disorients our innate mental compass. In other words, we become lost.

The so-called mental compass is not unique to our species. With other mammals appearing to match and even surpass our navigation skills in unfamiliar territory, Dudchenko proffers studying test mammals as a reductionist approach to understanding the phenomenon in humans. A particular focus is on how rats solve mazes, with two chapters tracing the history and lessons of a century's worth of such experiments. The body of evidence suggests two strategies rats may wield to conquer spatial puzzles. One is route memorization, dependent upon the animal's mental cataloging of visible landmarks and the connections among them. The second is a broad knowledge of layout, not dependent on landmarks, therefore affording an animal greater flexibility in locating an alternate route to a given destination. The latter strategy is more prone to error accrual, Dudchenko reasons. As a result, if similar cognition occurs in humans, it may engender a false sense of orientation, posing one explanation for getting lost. Rodents also make a significant appearance in three subsequent chapters that, transitioning from behavioral psychology to neuroscience, explore the roles of neurons that fire in response to spatial changes. These include place cells (which increase their firing as an animal moves through a specific location), grid cells (whose firing creates a regular triangle-pattern), and head direction cells (which decrease their firing rates when an animal turns its head from the preferred direction).

The rodent studies are fascinating in and of themselves. Yet if the reader's aim is to use them as clues into human tendencies, Dudchenko's disclaimers on the limitations of such leaps may be too little, too late. In fact, for a book whose title heralds attention to humans, a good portion of it addresses the topic from the perspective of species other than our own. For the more overtly relevant, the reader can start at the chapter entitled "Human Navigation." That and the following chapter – "Spatial Cognition in Children" – are easy to digest, containing facts that lend themselves to practical advice in addition to intellectual fodder. The reports in these chapters are likelier to be the ones that stick in a reader's memory when he or she battles through a blizzard or falls asleep on a train and loses track of its direction. Some cocktail party highlights include: people tend to walk in a spiral, not a straight line, with eyes closed; when vision becomes blocked, memory of the landscape provides sufficient guidance for eight seconds; and though the Earth is a giant magnet, humans do not, unfortunately, possess a magnetic "sixth sense" to complement it. Of medical interest is the penultimate chapter, which blends the neuroscience gleaned from animal models with stories of human illness to offer a distinctive view of Alzheimer's disease.

*Why People Get Lost* demands no specialized knowledge of neuroscience, as its inside flap advertises. This is true to an extent; the book is an academic behemoth of research and data, but Dudchenko guides the reader through it with engaging anecdotes that inject a personal flair into the hard science. He writes with a refreshing directness, beginning each new subject with an introduction that tells the reader: this is what you are going to learn, this is how I am going to show you, and this is why you should care. If wayfinding intrigues you without preamble, it may not be long before you become lost in the read.

### Disclaimer

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Ilana R. Yurkiewicz
*Harvard Medical School, 25 Shattuck Street, Boston, MA 02115, USA*
*Department of Neurology, Uniformed Services University of the Health Sciences, 4301 Jones Bridge Road, Room A1036, Bethesda MD 20814-4799, USA*
Corresponding author. Tel.: +1 202 782 7106.
*E-mail address:* ilana_yurkiewicz@hms.harvard.edu.

Jack W. Tsao
*Department of Neurology, Uniformed Services University of the Health Sciences, 4301 Jones Bridge Road, Room A1036, Bethesda MD 20814-4799, USA*

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